

PURCHASE DESCRIPTION  
REFLECTOMETER, FREQUENCY DOMAIN

FDRKP-E

- 1.0 GENERAL This procurement requires a swept-frequency reflectometer capable of characterizing faults in coaxial and waveguide transmission lines.
- 2.0 CLASSIFICATION The equipment shall meet the requirements of MIL-T-28800( ), Type III, Class 5, Style S, and Color R for Navy shipboard, submarine and shore applications with the following modifications and exceptions:
- a. The relative humidity requirement is limited to 95% non-condensating.
  - b. The operating and non-operating altitude requirements are not invoked.
  - c. The Electromagnetic Interference Requirements (EMI) of MIL-T-28800( ) are limited to CE01 (relaxed 20 dB), CE03 (broadband limits relaxed 20 dB below 200 kHz), CS01, CS02 (0.05 to 100 MHz), CS06, RE01 (0.03 to 15 kHz), RE02 (14 kHz to 10 GHz) and RS03.
- 3.0 OPERATIONAL REQUIREMENTS The equipment shall be capable of characterizing transmission lines with a single measurement as specified below. Hard-copy printouts of distance-to-fault with associated line loss and VSWR vs frequency shall be provided.
- 3.1 Frequency Range. 25 MHz to 1.2 GHz
- 3.2 Impedance. 50 ohms nominal
- 3.3 VSWR accuracy
- a. 5% maximum for indicated values of 1.10 to 1.99.
  - b. 10% maximum for indicated values of 2.00 or higher.
- 3.4 Sweep Rate. At least 1 point/30 ms, one second per full sweep nominal
- 3.5 Sweep Increments. 5% or less of the specified frequency range, or 100 kHz min  $\Delta$  freq. step, or whichever is less.
- 3.6 Foreign Signal Rejection. A means shall be provided wherein harmonics and foreign signals that are within 10% of the operating frequency, and have an amplitude of 10 dBm or less for distance-to-fault measurements and 0 dBm or less for VSWR vs frequency measurements, are rejected from the characterization process.
- 3.7 Distance-to-fault and Line Loss Mode. The equipment shall measure and indicate the distance

to each fault in a transmission line, the line loss, and VSWR associated with each fault.

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|---------|---|-------------------|
| 3.7.1   | Dynamic range: $\geq 50$ dB   | [RF out = 0 dBm]  |
| 3.7.2   | Location accuracy (D = distance to fault)   |                   |
|         | a. $\leq \pm 1.5$ ft  | [D $\leq 150$ ft] |
|         | b. $\leq \pm D/100$   | [D $\geq 150$ ft] |
| 3.7.3   | Overload indication. When the input exceeds 17 dBm, the equipment shall provide the operator with an overload indication. Maximum input: 22 dBm   |                   |
| 3.8     | <u>VSWR vs. Frequency Mode</u> . A mode shall be provided where the equipment will measure and indicate VSWR vs frequency.  |                   |
| 3.8.1   | Dynamic range: $\geq 50$ dB   |                   |
| 4.0     | <u>GENERAL REQUIREMENTS</u>   |                   |
| 4.1     | <u>Power Source</u> MIL-T-28800( ) nominal power source requirements are invoked. Maximum power consumption: 75W.   |                   |
| 4.2     | <u>Lithium Batteries</u> Per MIL-T-28800( ), lithium batteries are prohibited without prior authorization. A request for approval for the use of lithium batteries, including those encapsulated in integrated circuits, shall be submitted to the procuring activity at the time of submission of proposals. Approval shall apply only to the specific model proposed. |                   |
| 4.3     | <u>Weight</u> $\leq 21.4$ kg (47 lb)  |                   |
| 4.4     | <u>Accessories</u>  |                   |
| 4.4.1   | Shielded open {Type N(m)}   |                   |
| 4.4.2   | Short {Type N(m)}   |                   |
| 4.4.3   | 50 Ohm Termination {Type N(m)}  |                   |
| 4.4.3.1 | VSWR: Less than 1.1:1 up to 2 GHz   |                   |